Amendments to the Drawings:

The attached sheet of drawings includes changes to Figures 1A and 1B. This sheet replaces the original sheet, which also includes Figures 1A and 1B. Each of Figures 1A and 1B has been amended to include the designation "(Prior Art)".

Attachments: 1 Replacement Sheet

REMARKS

Claims 1-26 remain pending in the application. The specification and drawings have been amended without introduction of new matter. Favorable reconsideration is respectfully requested in view of the above amendments and the following remarks.

The indication that claims 4-5, 9-13, 17-18, and 22-26 define allowable subject matter is noted with appreciation.

The drawings were objected to because, in the view of the Office, figures 1A and 1B should be designated by a legend such as –Prior Art–. In response, these figures have been amended accordingly, and are submitted herewith for the approval of the Examiner. Withdrawal of the objection is respectfully requested.

The title of the invention was objected to for allegedly not being descriptive. In response, the title has now been amended to closely follow the suggestion put forth by the Examiner. Accordingly, the objection to the title should be withdrawn.

The Abstract was objected to as allegedly not fully describing the disclosure sufficiently regarding the inventive method and apparatus. While Applicant does not agree with this assessment, in the interest of expediting prosecution of the application the Abstract has been amended to describe the invention in further detail. Withdrawal of this objection is therefore respectfully requested.

Claims 1, 7, 14, and 20 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Thomas (U.S. Patent No. 6,400,233) when considered in view of Paik et al. (U.S. Patent No. 5,363,408). This rejection is respectfully traversed.

As explained in the Background section of the specification, the bandwidth in wireless digital communication systems is a limited resource. Consequently, in most communications standards, the frequency bandwidth of a transmitted signal is strictly regulated by the system specifications. While the standards often allow for some small spectrum leakage outside the desired frequency band and also for some signal distortions in the time domain to allow for cost-efficient and current-efficient transmitter architectures, the amount of permissible signal distortion is limited. In communication systems employing IQ-modulation, satisfying the system requirements can necessitate the use of high-performance power amplifiers that are expensive.

It can be advantageous to utilize a polar modulator when implementing a linear modulation-based system. However, linear modulation is optimized for linear signal

generation with conventional IQ-modulators, and the generation of linear modulation with a polar modulator results in amplitude and phase signals having a very high bandwidth. This, in turn, necessitates the use of very high quality components having sufficient bandwidth capability to effectively provide the high-bandwidth amplitude and phase signals. This makes the use of polar modulators very expensive, which largely negates the cost savings and current-consumption savings associated with the radio part of a system utilizing a polar modulator.

Various embodiments of the invention address this problem by providing techniques and apparatuses that reduce the phase signal and amplitude signal bandwidths of a polar-modulation signal, and that reduce the modulation depth of an IQ-modulation signal, while retaining the desired signal information and while satisfying system specification requirements, EVM requirements and spectrum-mask requirements such that cost-efficient and current-efficient polar modulators and/or power amplifiers can be utilized.

Accordingly, independent claim 1 defines a method of generating a radio frequency signal that represents a sequence of information bits, the method comprising, *inter alia*, "generating a resultant baseband signal by selectively generating *either* a non-distorted complex-valued baseband signal *or* a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits". (Emphasis added.)

Independent claim 14 similarly defines an apparatus for generating a radio frequency signal, comprising, *inter alia*, "logic that generates a resultant baseband signal by selectively generating *either* a non-distorted complex-valued baseband signal *or* a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits". (Emphasis added.)

Neither Thomas nor Paik et al. disclose or even suggest selectively generating either a non-distorted or a distorted signal. With this feature lacking, they of course also fail to disclose selection between the two alternatives being based upon values of information bits in the sequence of information bits. Consequently, no combination of the teachings of these two references can include these features. The Office has therefore failed to make out even a *prima facie* case of obviousness because one of the necessary criteria for such a rejection is that the prior art references, when combined, must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

What Thomas instead discloses is a distortion compensating apparatus for use in IQ modulation and demodulation techniques wherein a first distortion arrangement distorts the I-signal by adding to the I-signal a first weighted function of the I-signal and a first weighted function of the Q-signal and a second distortion arrangement distorts the Q-signal by adding to the Q-signal a second weighted function of the I-signal and a second weighted function of the Q-signal, such that the weighted functions of the I-signal are independent of the Q-signal and the weighted functions of the Q-signal are independent of the I-signal. As is expressly stated in Thomas at, for example, column 4, lines 21-57, each of the weighting factors (A, B, C, D) is a constant. Thus, none of these can be selectively set to zero to eliminate distortion. From reading the text of Thomas and studying the figures, it is clear that distortion is always applied; there is no possibility disclosed or even suggested for selectively turning the distortion off, as would be required to satisfy the terms of Applicant's rejected claims.

Nor does Paik et al. make up for this deficiency. The Paik et al. patent does not discuss the deliberate addition of distortion to a baseband signal, and is instead concerned with a mode selective quadrature amplitude modulation communications system.

The Office relies on Thomas at column 4, lines 28-55 as allegedly showing "that the distorted compensated I-signal' and Q-Signal' is exclusively/selectively created/generated in order to reduce the distortion." However, this section of Thomas discloses only the generation of distortion that is always added to the original information signal. Nothing in this or any other part of Thomas discloses the possibility of selectively distorting or not distorting the signal.

For at least the foregoing reasons, claims 1 and 14 are believed to be patentably distinguishable over Thomas and Paik et al., regardless of whether these references are considered individually or in combination. Claims 7 and 20, which depend from claims 1 and 14 respectively, are patentable for at least the same reasons. It is therefore respectfully requested that the rejection of claims 1, 7, 14, and 20 under Section 103, be withdrawn.

Claims 2, 3, 6, 15, 16, and 19 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Thomas and Paik as applied to claims 1 and 14, and further in view of Masheff (U.S. 4,696,017). This rejection is respectfully traversed.

Claims 2, 3, 6, 15, 16, and 19 variously depend from claims 1 and 14, and are therefore patentable over any combination of Thomas and Paik et al. for at least the reasons set forth above. The Masheff patent fails to make up for the deficiencies of Thomas and Paik

et al. at least because it too fails to disclose or suggest a system that selectively generates either a non-distorted or a distorted signal. With this feature lacking, Masheff of course also fails to disclose selection between the two alternatives being based upon values of information bits in the sequence of information bits, as further required by the claims.

For at least the foregoing reasons, claims 2, 3, 6, 15, 16, and 19 are believed to be patentably distinguishable over any combination of Thomas, Paik et al., and Masheff. Accordingly, it is respectfully requested that the rejection of these claims under Section 103 be withdrawn.

Claims 8 and 21 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Thomas and Paik et al, as applied to claims 1 and 14, and further in view of Turcotte (U.S. 6,441,694). This rejection is respectfully traversed.

Claims 8 and 21 depend from claims 1 and 14, respectively, and are therefore patentable over any combination of Thomas and Paik et al. for at least the reasons set forth above. The Turcotte patent fails to make up for the deficiencies of Thomas and Paik et al. at least because it too fails to disclose or suggest a system that selectively generates either a non-distorted or a distorted signal. With this feature lacking, Turcotte of course also fails to disclose selection between the two alternatives being based upon values of information bits in the sequence of information bits, as further required by the claims.

For at least the foregoing reasons, claims 8 and 21 are believed to be patentably distinguishable over any combination of Thomas, Paik et al., and Turcotte. Accordingly, it is respectfully requested that the rejection of these claims under Section 103 be withdrawn.

The application is believed to be in condition for allowance. Prompt notice of same is respectfully requested.

Respectfully submitted,

Potomac Patent Group PLLC

Date: February 7, 2005

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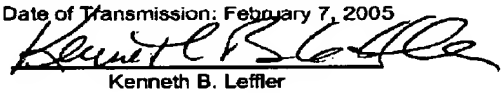
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